

1. (Amended) A monitoring system for a distributed environment including a plurality of hosts capable of executing multiple copies of a scalable application, comprising:

means for generating first data corresponding to performance of all copies of the scalable application;

means for generating second data corresponding to performance of all hosts in the distributed environment; and

means for generating performance metrics employed in controlling the managed characteristic applications based on the first and second data.

Please ~~ADD~~ new claims ~~2-30~~ as follows:

--2. A monitoring system for a grid system including a plurality of networked hosts capable of executing managed characteristic applications, comprising:

means for generating first data corresponding to performance of all managed characteristic applications;

means for generating second data corresponding to performance of all networked hosts; and

means for generating performance metrics employed in controlling the grid system based on the first and second data.--

--3. The monitoring system as recited in claim 2, wherein one of the managed characteristic applications comprises a scalable application.--

1           --4. The monitoring system as recited in claim 2, wherein one of the managed characteristic  
2 applications comprises a fault tolerant application, where the degree of fault tolerance is selectable  
3 by a user.--

1           --5. The monitoring system as recited in claim 2, wherein one of the managed characteristic  
2 application comprises a selectable priority application.--

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2           --6. The monitoring system as recited in claim 2, wherein one of the managed characteristic  
applications further responds to user-initiated control actions.--

1           --7. The monitoring system as recited in claim 2, wherein the second data produced by the  
2 second data generating means includes network device performance data.--

1           --8. A monitoring system for a distributed environment including N hosts capable of  
2 executing M managed characteristic applications, where M and N are positive integers, comprising:  
3 application monitor functions instantiated by corresponding ones of the N hosts which  
4 generate first data corresponding to performance of the M managed characteristic applications;  
5 host monitor functions instantiated by the N hosts which generate second data corresponding  
6 to performance of all hosts in the distributed environment; and

7 functions instantiated by selected ones of the N hosts which generate performance metrics  
8 permitting control of one of the N hosts and the M managed characteristic applications based on the  
9 first and second data.--

1 --9. The monitoring system as recited in claim 8, wherein one of the M managed  
2 characteristic applications comprises a scalable application.--

1 --10. The monitoring system as recited in claim 8, wherein one of the M managed  
2 characteristic applications comprises a fault tolerant application, where the degree of fault tolerance  
3 is selectable by a user.--

1 --11. The monitoring system as recited in claim 8, wherein one of the M managed  
2 characteristic application comprises a selectable priority application.--

1 --12. The monitoring system as recited in claim 8, wherein the host monitor functions query  
2 all of the N hosts and interconnecting network components on a periodic basis to thereby generate  
3 the second data.--

1 --13. The monitoring system as recited in claim 8, wherein the host monitoring functions  
2 comprises:

3 N host monitors instantiated by the N hosts which collect extensive operating system-level  
4 data for each of the N hosts; and

5 a host discovery function employing Simple Network Management Protocol (SNMP) calls  
6 and ping Internet Control Message Protocol (ICMP) calls to determine when a new host comes on-  
7 line and if an operating one of the N hosts stops operating.--

1 --14. The monitoring system as recited in claim 13, wherein the N host monitors employ  
2 operating system-level mechanisms to retrieve information representing the status, the configuration,  
3 and the performance on each of the N hosts.--

1 --15. The monitoring system as recited in claim 13, wherein the retrieved information  
2 includes:

3 operating system version and machine configuration;

4 CPU configuration, status, and utilization;

5 memory configuration and usage;

6 network configuration, status, and utilization;

7 filesystem configuration, status, and utilization; and

8 process statuses including CPU, memory, network, and filesystem utilization for each  
9 process.--

--16. The monitoring system as recited in claim 13, wherein the host monitoring functions further comprise N history server functions which collect data from the N host monitors, respectively, to thereby maintain status and performance histories on each of the N hosts.--

--17. The monitoring system as recited in claim 8, wherein:

the application monitor function further comprises:

instrumentation application programming interfaces (APIs) libraries linked to the M managed characteristic applications; and

N instrumentation daemons which receive instrumentation data generated by the API calls from the M managed characteristic applications and reformat the instrumentation data into instrumentation event messages; and

the first data is generated responsive to the instrumentation event messages.--

--18. The monitoring system as recited in claim 17, wherein calls to the API libraries produce respective application performance data for the M managed characteristic applications.--

--19. Software stored on at least one host for converting N networked hosts into a resource managed system instantiating M managed characteristic applications, comprising:  
a first function group which monitors the N hosts and network resources;

4 a second function group which provides general-purpose application event reporting and  
5 event correlation capabilities;

6 a third function group which provides the reasoning and decision-making capabilities for the  
7 resource managed system; and

8 a fourth function group which provides program control capabilities permitting starting,  
9 stopping, and configuring of selected ones of the M managed characteristic applications on  
10 respective ones of the N hosts in the resource managed system,

11 wherein:

A2  
Cm 12 the first function group includes host monitor functions instantiated by first selected ones of  
13 the N hosts which generate first data corresponding to performance of all hosts and network devices  
14 in the distributed environment;

15 the second function group includes application monitoring functions instantiated by  
16 corresponding ones of the N hosts which generate second data indicative of performance of the M  
17 managed characteristic applications; and

18 one of first and second function groups provides metric functions instantiated by second  
19 selected ones of the N hosts which generate performance metrics based on the first and second data  
20 and provides the performance metrics to the third function group.--

1           --20. The software as recited in claim 19, wherein the host monitor functions query all of the  
2 N hosts and interconnecting network components on a periodic basis to thereby generate the second  
3 data.--

1           --21. The software as recited in claim 19, wherein the host monitoring functions comprises:  
2 N host monitors instantiated by the N hosts which collect extensive operating system-level  
3 data for each of the N hosts; and  
4           a host discovery function employing Simple Network Management Protocol (SNMP) calls  
5 and ping Internet Control Message Protocol (ICMP) calls to determine when a new host comes on-  
6 line and if an operating one of the N hosts stops operating.--

1           --22. The software as recited in claim 21, wherein the N host monitors employ operating  
2 system-level mechanisms to retrieve information representing the status, the configuration, and the  
3 performance on each of the N hosts.--

1           --23. The software as recited in claim 22, wherein the retrieved information includes:  
2 operating system version and machine configuration;  
3 CPU configuration, status, and utilization;  
4 memory configuration and usage;  
5 network configuration, status, and utilization;

6 filesystem configuration, status, and utilization; and  
 7 process statuses including CPU, memory, network, and filesystem utilization for each  
 8 process.--

1 --24. The software as recited in claim 21, wherein the host monitoring functions further  
 2 comprise N history server functions which collect data from the N host monitors, respectively, to  
 3 thereby maintain status and performance histories on each of the N hosts.--

1 --25. The software as recited in claim 19, wherein:

2 the application monitor function further comprises:

3 M instrumentation application programming interfaces (APIs) linked to the M copies  
 4 of the managed characteristic application; and

5 M instrumentation daemons which receive instrumentation data generated API calls  
 6 from the M copies of the managed characteristic application and reformat the instrumentation data  
 7 into instrumentation event messages; and

8 the first data is generated responsive to the instrumentation event messages.--

1 --26. The software as recited in claim 19, wherein the first function group comprises:

2 host monitor functions, which reside on and collect operating system-level data each of the  
 3 N hosts;



history server functions, which collect system-level data from the Host Monitor functions, respectively, maintain status and performance histories on each of the N hosts; and

a host discovery function which uses Simple Network Management Protocol (SNMP) calls and ping Internet Control Message Protocol (ICMP) calls to determine when new hosts come on-line and if an operating one of the N hosts ceases to function.--

--27. The software as recited in claim 19, wherein the second function group comprises:

instrumentation API Libraries which are linked with the N copies of the managed characteristic application and provide function call interfaces by which the application copies generate instrumentation data;

instrumentation daemon functions, which reside on each of the N hosts, that read the instrumentation data generated by the N copies of the managed characteristic application, that reformat the data into instrumentation event messages, and that send the event messages to instrumentation collector functions;

the instrumentation collector functions, which are operatively coupled to the instrumentation daemon functions, that forward the received event messages to instrumentation correlator functions and instrumentation broker functions;

the instrumentation correlator functions that provide grammar-driven capabilities for correlating, combining, and reformatting application data into higher-level metrics provided to the third function group; and

the instrumentation broker functions that receive event messages from the instrumentation collector functions and perform task-specific reformatting and data manipulation for driving displays.--

--28. The software as recited in claim 19, wherein one of the M managed characteristic applications comprises a scalable application.--

--29. The software as recited in claim 19, wherein one of the M managed characteristic applications comprises a fault tolerant application, where the degree of fault tolerance is selectable by a user.--

--30. The software as recited in claim 18, wherein one of the M managed characteristic application comprises a selectable priority application.--

# REMARKS

Claims 1-30 are pending in the Application. In the Preliminary Amendment, claim 1 is amended for clarity and new claims 2-30 are added to recite features of the present invention that were previously disclosed but unclaimed in the application as originally filed. The attached Appendix contains a version of the claims without markings.